NASS SUMMARY OF SATELLITE & AERIAL PHOTOGRAPHY USES

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FOUR APPPLICATIONS

- Conducting the June Area Frame Survey.
- Crop acreage estimation in major crop states.
- Formation of the public use GIS Data file called the *Cropland Data Layer*.
- Crop condition monitoring using low resolution imagery.

1. Conducting The June Area Frame Survey

- Sampling of an area in the first two weeks of June (two-stage sampling used).

1. Primary Sampling Units- Satellite imagery used to stratify the land into broad land-use categories for the purpose of later sampling to estimate acres of crops planted (Landsat 7, or 5 when 7 is not available).

2. Segments – Selected using DOQQ's & Landsat 7 in states with digital, or contact prints (from APFO) in states with paper-based frames (preference for leaf-off, B&W).

3. 24x24 enlargements ordered for segments chosen for interviewers to use in field data collection.

4. 11,000 segments each year, used for 5 years, approx. 2500 segments rotated each year.

5. Feb 2003 - begin selecting samples that will rotate for use in June 2004 (2800-4000 estimate, depending on budget).

6. Plan to be developed in case APFO no longer produces photographs.

2. Crop acreage estimation in major crops states

- Utilizes multi-temporal Landsat Thematic Mapper and/or Enhanced Thematic Mapper digital imagery.
- NASS has been the lead organization in the development of probability based procedures for categorization, or classification, of remote sensing imagery by crop types and using this to estimate crop areas.
- Occasionally uses Indian LISS sensor or SPOT MSS for areas cloudy in the Landsat imagery.
- States currently involved in this program are:

Illinois	Mississippi
Indiana	Nebraska
Arkansas	North Dakota
Missouri	Wisconsin

3. Formation of a public use GIS data file called the Cropland Data Layer

- Mosaic of the crop specific categorizations of the “best available” set of Landsat (30m resolution) for the state and crop season of interest.
- Some uses:

  Watershed monitoring
  Soils utilization analysis
  Agribusiness planning
  Crop rotation practices analysis
  Animal habitat monitoring
  Prairie water pothole monitoring
  Remote sensing/GIS value-added industry

4. Crop condition monitoring using low resolution NOAA satellites

- Advanced Very High Resolution Radiometer (AVHRR) sensor.
- Creates a bi-weekly composite of the Normalized Difference Vegetation Index (NDVI).
- NASS creates several graphics products to monitor crop progress and serve as early warning for stress.
- Links to the Weekly Crop and Weather Report.

Summary

Aerial Photography

Satellite Imagery

NASS Unit Using	Currently Using	Nice to have if available at no cost	Used in Special Projects	*Currently using*	*Nice to have if available at no cost*	*Used in Special projects*
SARS (Spatial Analysis Research Service)				*30m MS (US)*	*40-90m MS (US)*	*.75-1m MS (US)*
				1000-2000m MS (US)	*100-250m MS (US)*	*20m MS (US)*
AFS (Area Frame Section)	1m leaf-off B&W (US) (DOQQ's and photos	1m leaf-off color or CIR (US) (DOQQ's and photos)		*30m TM (US)*	*1m MS (US & Puerto Rico)*	*20m MS (US)*
	1m leaf-on B&W (Puerto Rico) (DOQQ's and photos)	1m leaf-on color or CIR (Puerto Rico) (DOQQ's and photos)			*5m MS (US and Puerto Rico)*	